ARCADIS Design & Consultancy for natural and built assets

Respondents to Administrative Order on Consent for Remedial Design

LOCAL DISPOSAL ASSESSMENT REPORT

Lower Ley Creek Subsite
Operable Unit 25 of the Onondaga Lake Superfund Site
City of Syracuse/Town of Salina
Onondaga County, New York

December 2016

LOCAL DISPOSAL ASSESSMENT REPORT

Lower Ley Creek Subsite
Operable Unit 25 of the Onondaga Lake Superfund Site
City of Syracuse/Town of Salina
Onondaga County, New York

Mark O. Gravelding
Project Coordinator

Todd Cridge
Project Manager

Prepared for:
Respondents to Administrative Order on Consent for Remedial Design

Prepared by:
Arcadis of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315 446 9120
Fax 315 449 0017

Our Ref.:
B0035101.0001

Date:
December 2016

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

On behalf of the Respondents to Administrative Order on Consent for Remedial Design (Respondents), Arcadis of New York, Inc. (Arcadis) has prepared this Local Disposal Assessment Report (Disposal Assessment) in support of the remedial design of the selected remedy for the Lower Ley Creek Subsite (the Subsite) of the Onondaga Lake Superfund Site pursuant to the United States Environmental Protection Agency (USEPA) Record of Decision dated September 2014 (ROD, USEPA 2014b).

The Subsite (Superfund Site Identification Number NYD986913580) is located in Onondaga County, New York, within the City of Syracuse and the Town of Salina. As illustrated on Figure 1, the Subsite consists of the lower 2 miles of Lower Ley Creek and adjacent upland soil areas between the State Route 11 Bridge and Onondaga Lake as well as the Old Ley Creek Channel, which is a remnant of the creek located near the upstream-most portion of the Subsite.

The selected remedy for the Subsite, as presented in the ROD, is primarily based on the presence of polychlorinated biphenyls (PCBs) in Ley Creek sediments and soils. The remedy involves excavating impacted sediment from Lower Ley Creek between the Route 11 Bridge and Interstate 81, from the Old Ley Creek Channel, and from soils associated with former dredge spoil deposits in the floodplains and the Old Ley Creek Channel area. Disposal of excavated materials includes:

- Transporting materials containing PCB concentrations greater than 50 milligrams per kilogram (mg/kg) to a Toxic Substances Control Act (TSCA) compliant facility.
- Transporting materials that fail toxicity characteristic leaching procedure (TCLP) testing, are determined to be characteristic hazardous waste, and are non-TSCA waste (i.e., PCB concentrations less than 50 mg/kg) to an off-site Resource Conservation and Recovery Act- (RCRA) compliant facility.

- Transporting excavated soils and sediments that are not TSCA-regulated (i.e., PCB concentrations less than 50 mg/kg) and are not characteristic hazardous waste to a local disposal facility, if available and feasible.

This Local Disposal Assessment compares the potential feasibility of two local landfills for the final disposal of excavated materials that are neither TSCA- or RCRA-regulated. In this assessment, the two candidate local disposal sites, identified in the SOW, as described in subsequent sections of this Disposal Assessment, include 1) the Town of Salina (Salina) Landfill; and 2) the Cooper Crouse-Hinds (CCH) North Landfill, the locations of which are illustrated on Figure 1.

1.1 Disposal Assessment Objectives

The objectives of this Disposal Assessment is to confirm the viability of the ROD identified "most viable" local disposal options and any other potentially viable local option by:

- Identifying, on a conceptual level, technical design and construction requirements for the identified most viable options and any other potentially viable option.
- Compare and contrast each potential disposal site based on the technical design and construction requirements identified in the first objective.
- Provide, for comparison purposes only, feasibility-level cost estimates for the construction, operation and maintenance, and useful life of each potential disposal site.

As stated above, the purpose of the Disposal Assessment is to further investigate and compare the feasibility of using either the Salina or CCH landfills. This assessment has been performed assuming the remediation volumes identified in the ROD. However, there is some potential for those volumes to change based on the results of the pre-design investigation (PDI). If volumes change significantly, the results of this assessment may change. As a result, the Respondent's reserve the right to revisit this Disposal

Assessment following the conclusion of further PDI work, and any resulting revisions to the anticipated removal limits.

1.2 Potential Local Disposal Sites

As indicated in the ROD, 22 sites within 10 miles of the Subsite were considered for local disposal of soils and sediments that are not considered TSCA- or RCRA- regulated waste. Of those 22 sites, the Salina and CCH Landfills, illustrated on Figure 2, were selected based on an initial technical and administrative feasibility screening. The Salina Landfill disposal site is the area within the Salina Landfill that is currently closed (capped) and includes a leachate management system. The CCH Landfill site is a newly constructed disposal cell (with a baseliner and cap) at the CCH North Landfill. Both of these disposal sites are located adjacent to Ley Creek. In either case, local disposal could be accomplished by the construction of temporary access roads to transport excavated materials from the work areas to the respective designated disposal areas.

Additional background information pertaining to each disposal site is provided in the following sections.

1.2.1 Salina Landfill

The Salina Landfill, located at 1483 Brewerton Road in Syracuse, New York, is a municipal landfill located within an industrial-zoned area. The site is bounded to the north by the New York State Thruway, to the east by Route 11, and to the west by the Onondaga County Resource Recovery Agency Ley Creek Transfer Station. The western and southern half of the site is bounded by Ley Creek. The eastern half of the site is bounded to the south by Old Ley Creek. Both Ley Creek and a National Grid electrical transmission bisect portions of the site.

1.2.1.1 Landfill History

The Salina Landfill (New York State Department of Environmental Conservation [NYSDEC] Site No. 7-34-036) was used for the disposal of domestic, commercial, and

industrial waste from 1956 until 1974. During this time, the landfill accepted hazardous waste including, but not limited to, paint thinner, PCB-impacted wastes, buffing sludge, and contaminated sediment from Ley Creek. The landfill was officially closed in late 1974 or early 1975, pursuant to an order by NYSDEC.

In September 1981, the Town of Salina installed 2 feet of clay-type vegetated soil over the landfill. This project was completed in November 1982, and no further construction activities were undertaken at the site until November 2010 as described below.

The Salina Landfill was designated a Class 2 Inactive Hazardous Waste Site in 1996 by NYSDEC, and in 1997, a Subsite of the Onondaga Lake Superfund Site due to releases or the threat of releases of hazardous substance, pollutants, or contaminants into Ley Creek, which flows into Onondaga Lake. From 1997 to 2010, multiple remedial investigations/feasibility studies were performed associated with the fate of the landfill. In 2007, an ROD for closure of the Salina Landfill was published by NYSDEC and USEPA and was subsequently amended in 2010.

In 2010, the remedial design for the landfill closure was approved by NYSDEC, and associated remediation activities were implemented between 2010 and 2013. Remediation activities at the landfill were initiated by NYSDEC and included removal of volatile organic compounds (VOCs) from select areas. For reference purposes, the remedial design separated the Salina Landfill into seven parcels, as illustrated on Figure 2. Various remediation activities were performed within each parcel to facilitate closure of the Salina Landfill, including the following:

- Parcel 1 (5 acres) – Municipal solid waste was excavated and relocated to Parcel 2. A 1.33-acre wetland mitigation area was also constructed.
- Parcel 2 (25 acres) – Municipal solid waste and construction and demolition debris excavated from adjacent parcels was consolidated in Parcel 2. Parcel 2 was then capped with a geomembrane cover system.
- Parcel 3 (8 acres) – To facilitate access for National Grid, a large portion of this parcel was covered with a clay cap. An approximately 2-acre area of this parcel contained

solid waste in de minimis quantities; the solid waste was removed to eliminate the need for a cap over this portion of the landfill.

- Parcel 4 (6 acres) – Municipal solid waste from this parcel was excavated approximately 30 feet from Ley Creek and relocated to Parcel 2. The remaining area was then capped with a geomembrane cover system.
- Parcel 5 (5 acres) – Municipal solid waste on this parcel was excavated approximately 30 feet back from Ley Creek and relocated to Parcel 2. The remaining area was capped with a geomembrane cover system.
- Parcel 6 (6 acres) – Municipal solid waste from this parcel was excavated and relocated to Parcel 2. A 2.05-acre wetland mitigation area was also constructed on this parcel.
- Parcel 7 (2 acres) – Waste from this parcel was excavated and relocated to Parcel 2.

Based on available space, and additional features discussed below, for the purposes of this Disposal Assessment, Parcel 2, the boundaries of which are illustrated on Figure 2, was selected as the conceptual site area to be evaluated for the disposal of Lower Ley Creek soils and sediments. In January 2012, a separate remedial design was approved for the construction of a groundwater/leachate collection trench for Parcel 2. Construction of the groundwater/leachate collection trench was completed by August 2012. The location of the groundwater/leachate collection trench is illustrated on Figure 2. The approximately 2,000-foot-long collection trench consists of the following components:

- Submersible extraction well pump stations throughout the collection trench with a high-density polyethylene (HDPE) force main
- On-site leachate pre-treatment plant, which has an approximate capacity of 25,000 gallons per day and includes:
  - An influent pump station
  - Process building

- 125,000-gallon storage tank
- Effluent flow metering and sampling infrastructure

The groundwater/leachate collection trench directs water to an on-site pre-treatment plant prior to discharging to the Metropolitan Syracuse Wastewater Treatment Plant (METRO) for final disposal.

1.2.1.2 Parcel 2 Existing Conditions

Parcel 2 provides the largest contiguous open area at the landfill and is within the area controlled by the groundwater/leachate collection trench. As noted above, Parcel 2 is a geomembrane-capped area that was constructed in accordance with the substantive requirements of NYSDEC's Title 6 of the New York Codes, Rules and Regulations (NYCRR) Part 360 (Part 360). Parcel 2 site features include a maintained vegetated cover, gas vents, stormwater management features, and perimeter access roads and fencing. The Salina Landfill within Parcel 2 varies from an approximate elevation of 370 to 405 feet above mean sea level (amsl). Slopes in Parcel 2 generally range from approximately 3 percent on the landfill plateau to approximately 33 percent at the perimeter. Stormwater runoff sheet flows radially outward from the center to a series of collection swales and downchutes, where it eventually is discharged to Ley Creek.

1.2.2 Cooper Crouse-Hinds North Landfill

The CCH Landfill (NYSDEC Site Number 7-34-004) consists of two inactive landfills, referred to as the North and South Landfills. As illustrated on Figure 2, Seventh North Street bisects the two landfills and is the boundary between the Town of Salina and the City of Syracuse. The North Landfill, located in the Town of Salina, is approximately 21.5 acres in size and bordered to the northeast by a former landfill owned by Plaza East, LLC; to the east by a wetland, CSX railroad tracks, and beyond by the CCH manufacturing facility; to the south by Seventh North Street and beyond by the South Landfill; and to the west by a wetland, also owned by Plaza East, and beyond by Ley Creek. The CCH

Landfill is located in an area currently zoned for industrial use. The wetlands bordering the eastern and western sides of the landfill are each approximately 2.6 acres in size.

1.2.2.1 Landfill History

Before the mid- to late-1950s, the North Landfill area had been occupied by low-lying fields, marshes, and woodlands. Beginning in the mid-1950s, the North Landfill was used for disposal of industrial wastes that were generated at the CCH manufacturing facility. Typical wastes placed in the North Landfill included foundry sand, core butts, floor sweepings, metal buffing and polishing residue, scrap lumber, plastic wastes, and paint scrapings. Zinc hydroxide sludge generated from the CCH manufacturing facility's wastewater treatment plant was also disposed of in the North Landfill from 1972 to 1980. Use of the North Landfill for waste disposal was discontinued in 1989.

The CCH Landfill site has been designated a Class 3 Inactive Hazardous Waste Disposal Site by NYSDEC. Remedial investigations associated with the North and South Landfills were conducted between 2004 and 2009, and a hotspot investigation was conducted in 2010 within the North Landfill. CCH entered into a Consent Order on August 29, 2011 with NYSDEC to implement a remedial action for the closure of the landfills in accordance with an ROD issued on March 31, 2011. Remedial activities were initiated in 2013 and completed in 2015 and included the following:

- Three hotspot removals were conducted within the North Landfill to remove wastes with elevated PCB, VOC, and non-aqueous phase liquid concentrations that were not suitable for local disposal.
- Waste consolidation was performed at both the North and South Landfills to reduce their footprints. The consolidation included waste removal from a 50-foot buffer zone area between the South Landfill and Ley Creek, 30-foot buffer zone areas between the landfills and on-site wetlands, and a buffer zone between the North Landfill and Seventh North Street. Wetland sediments meeting local disposal requirements were also consolidated. Wetland sediments that did not meet local disposal requirements were disposed of off-site.

- A geomembrane cover system, designed and constructed in conformance with the substantive requirements for landfill caps set forth in Part 360, was installed over the consolidation areas, above the water table, in each landfill.

1.2.2.2 Cooper Crouse-Hinds North Landfill Existing Conditions

The North Landfill was selected as the conceptual location evaluated in this assessment for the disposal of Lower Ley Creek soils and sediments. The North Landfill is the larger of the two CCH landfills. As noted above, the North Landfill has a geomembrane-capped area that was constructed in accordance with the substantive requirements of Part 360 regulations. The North Landfill site features include a maintained vegetated cover, gas vents, a drainage swale along the perimeters, and a perimeter fence. The existing elevation of the North Landfill varies from approximately 368 to 387 feet amsl. Slopes on the landfill generally range from approximately 5 percent to approximately 9 percent. Stormwater runoff sheet flows radially outward from the center to the adjacent wetlands or perimeter swales, which convey collected runoff to the wetlands.

1.3 Disposal Material Description

1.3.1 Disposal Material Characteristics

Materials excavated from Lower Ley Creek that are not TSCA- or RCRA-regulated are proposed for local disposal at one of the two disposal sites being evaluated in this Disposal Assessment. The total volume of non-TSCA-/non-RCRA-regulated material currently being evaluated for local disposal is estimated to be approximately 160,000 cubic yards. This volume is comprised of the following excavation quantities:

- An estimated 75,000 cubic yards (cy) of impacted soils located on the northern and southern banks of Lower Ley Creek

- An estimated 12,000 cy of impacted sediment from the wetland area
- An estimated 73,000 cy of impacted sediment from Lower Ley Creek

1.3.2 Disposal Material Dewatering and Solidification

Materials excavated from Lower Ley Creek will be dewatered prior to transportation to the landfill. Dewatering will occur at dewatering pads, adjacent to excavations, where construction water will be collected for treatment, followed by permitted discharge or disposal. Wet materials transported to the local disposal landfill will be mixed with other dry soils, placed in the landfill, and further dewatered via passive gravity drainage. Certain materials placed within the local disposal landfill may need to be augmented with stabilization material (e.g. Portland cement) in order meet specific in-place material properties (i.e., unit weight and shear strength) after placement to comply with minimum required factors of safety for slope stability. Materials will be tested during placement for unit weight and moisture content (which can be related to material shear strength), and engineering controls (e.g., air drying, amendment) performed as necessary to meet the design and operations requirements associated with the respective landfill. Water collected during gravity drainage, along with stormwater that comes in contact with materials prior to placement of the cover system, will be controlled, collected, and treated along with any other water generated by Subsite related remediation activities.

1.3.3 Disposal Material Consolidation

The excavated material will be dewatered, as necessary, and consolidated within the limits of the local disposal site. Consolidated material will be placed, compacted, and graded as necessary to achieve final grades, prior to placement of final cover materials.

1.4 Permitting

Construction of either disposal site would need to meet the substantive requirements of NYCRR Parts 360 and 373, but under the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA) would not need any permits.

Section 402 of the Clean Water Act is implemented by NYSDEC through the Environmental Conservation Law Article 17 State Pollutant Discharge Elimination System (SPDES) requirements, which regulate the discharge of pollutants into waters of the state. Pre-treatment or monitoring of decanted water resulting from excavated materials dewatering may be necessary. If discharged to surface water, the decanted water would be treated to meet NYSDEC's SPDES substantive discharge requirements.

2 DISPOSAL SITE COMPARATIVE ASSESSMENT

As described in Section 1, two existing landfills have been identified for assessment as local disposal sites for final disposal of excavated soils and sediments. Although both sites have challenges to construction, neither appear to have any significant issues which might make it infeasible. As a result, a comparative assessment of the relative benefits/challenges associated with each site has been performed based on the following general approaches to construction:

- At the Salina Landfill, excavated material would be consolidated above existing landfill waste materials following removal of portions of the existing cover, which would then be recapped.
- At the CCH North Landfill, excavated material would be consolidated within a lined cell with a leachate collection trench constructed above an existing landfill cover system and then capped.

Further descriptions of the two disposal sites and the various assessment criteria are provided in the following sections.

2.1 Conceptual Landfill Design

A conceptual landfill design was developed for each disposal site to allow for assessment of key implementation requirements and to facilitate preparation of feasibility-level costing for each disposal site to be used for comparison purposes. The conceptual designs were developed based on consideration of Part 360 regulations as well as on engineering judgment; considerations included, but were not limited to, baseliner and cover system construction requirements, minimum and maximum sideslopes, anticipated offsets from site features, and slope benching. Conceptual grading plans for the Salina Landfill and CCH North Landfill are shown on Figures 3 and 4, respectively. Site cross sections showing the vertical expansions of the existing landfills are shown on Figures 5 and 6 for the Salina Landfill and CCH North Landfill, respectively. Typical Part 360-type baseliner

and final cover details are shown on Figures 5 and 6. The conceptual landfill design for each site is described briefly below.

2.1.1 Salina Landfill (Parcel 2) Conceptual Design

The addition of Subsite material within Parcel 2 will require a vertical expansion of the landfill and lateral extension of the geomembrane. The existing final cover's geomembrane would be uncovered at the perimeter of the new fill area (i.e., near the existing plateau area grade break), cut, and a new final cover geomembrane would be attached. In addition, portions of the existing geomembrane on the interior of Parcel 2 may need to be removed to facilitate leachate migration from the new material into the underlying waste and eventual collection by the existing groundwater/leachate collection trench.

Following construction of a perimeter berm, sideslopes of the vertical expansion would extend at a 25 percent slope to an approximate elevation of 404 feet amsl. Conceptual landfill grades transition from the 25 percent sideslopes to a plateau that rises at a 4 percent slope to a maximum elevation of approximately 420 feet amsl. This conceptual grading results in a total height increase of approximately 15 feet above the existing landfill cover elevation in Parcel 2.

Placement of material within a vertical expansion at Parcel 2 will not require the construction of a baseliner liner system to facilitate leachate collection, as leachate is currently managed by the existing groundwater/leachate collection trench. Conceptual cover system components and thicknesses are shown on Figure 5.

Conceptual final grades shown on Figure 3 represent the top of the vegetated final cover. In consideration of the following, the conceptual design provides the minimum required airspace volume of 160,000 cubic yards and allows for up to a 25 percent contingency (approximately 40,000 cubic yards) of additional airspace: reduction of available airspace due to the proposed final cover system thickness, reduction due to construction of a perimeter berm, and increase in available airspace from the removal of a portion of the existing cover material (for reuse in the new final cover system). Other grading

configurations for Parcel 2 are possible (e.g., steeper sideslopes and plateau gradients) that would also achieve the minimum required airspace volume and still be compliant with Part 360.

2.1.2 Cooper Crouse-Hinds North Landfill Concept Design

Unlike the Salina Landfill, the CCH North Landfill does not have an existing leachate management system. Therefore, in accordance with Part 360 regulations and the requirements of the ROD, a new cell will need to be constructed above the existing landfill and must incorporate a baseliner system to prevent leachate from leaving the landfill cell, a leachate pre-treatment system, and a final cover system. Potential conceptual baseliner and cover system components for the North Landfill are shown on Figure 6.

It is anticipated that the existing geomembrane and final cover system at the North Landfill will be left in place. Protection of the existing geomembrane will be required on the sideslopes, where the overlying cell will not be constructed. Further consideration, during subsequent planning and design phases, will need to be given to the protection and reconfiguration of the existing landfill gas collection system. As the two landfill cells (i.e., the existing North Landfill and the new conceptual landfill) will be separate, each will require a means to vent built-up gas from beneath their respective cover systems.

Following construction of a perimeter berm and baseliner system, sideslopes of the new cell would extend at a 33 percent slope to an approximate elevation of 406 feet amsl. Conceptual landfill grades break to a plateau having a 4 percent slope up to a maximum elevation of 418 feet amsl, resulting in a total height increase of approximately 31 feet above the existing North Landfill elevation.

Conceptual final grades shown on Figure 4 represent the top of the vegetated final cover. The conceptual design provides the minimum required airspace volume of 160,000 cubic yards and allows for a 13 percent contingency (20,000 cy) based on consideration of the following: reduction in airspace due to the baseliner and final cover system thicknesses; reduction due to construction of a perimeter berm; and increase in available airspace from removal of a portion of existing cover material (for reuse in the new final cover system).

2.2 Assessment Criteria

Assessment criteria were primarily selected based on the impact to constructability and construction cost. The criteria used in this assessment include:

- Conceptual Airspace Volume
- Conceptual Landfill Grading
- Baseliner and Leachate Management System Requirements
- Gas Venting
- Site Access
- Adjacent Sensitive Receptors

Other comparative factors (e.g., site preparation, final cover system construction, potential settlement of underlying soils) were considered, but have not been carried forward in this assessment because they did not appear to provide significant distinction in constructability or cost between the two sites. For example, each site would require a similar final cover system design constructed in accordance with Part 360 regulations. The selected assessment criteria are briefly described below and are presented for comparison purposes in Table 1 in Section 2.3 of this Disposal Assessment.

2.2.1 Conceptual Airspace Volume

Based on the conceptual grading designs described above and shown on Figures 3 and 4, each landfill has the capability to achieve the minimum required airspace capacity of 160,000 cubic yards. However, the Salina Landfill has a greater potential for available contingency airspace volume as compared to the North Landfill, allows for flatter sideslopes, and requires approximately half of the height increase as that required at the North Landfill. The North Landfill is constrained on two sides by two large wetlands that confine the footprint and require a taller fill with steeper sideslopes to achieve the minimum required airspace volume.

2.2.2 Conceptual Landfill Grading

As noted in Section 2.1.1, the Salina Landfill Parcel 2 landfill height increases approximately 15 feet above the current maximum height with 25 percent sideslopes. The North Landfill height increases approximately 31 feet with approximately 33 percent sideslopes. In addition, the North Landfill has more of an irregular shape, which may create greater challenges during waste placement and grading activities. Given the steeper and taller slopes, a more robust design and construction approach may be required for the North Landfill to reduce the potential for sideslope failure and erosion of the final soils.

2.2.3 Baseliner and Leachate Management System Requirements

As mentioned previously, the Salina Landfill has an existing groundwater/leachate collection trench and therefore would not require construction of a baseliner system to capture leachate from material placed at the Subsite. The North Landfill, however, does not have any means for leachate management. In accordance with the ROD and substantive requirements of the Part 360 regulations, a baseliner system (consisting of a double-liner configuration), as shown on Figure 6, would be required to capture leachate and provide for leak detection of the primary liner system.

In addition, a leachate pre-treatment system may be required at the North Landfill to allow for discharge to the Town of Salina's sanitary system (i.e., METRO). Authorization for discharge and subsequent pre-treatment requirements would need to be confirmed with the Town of Salina and Onondaga County during detailed planning and design phases. Alternate management options, such as conveyance (by pipe or other means) of leachate from the North Landfill to the Salina Landfill pre-treatment system and subsequent discharge from the Salina Landfill, could also be evaluated as part of the detailed design phase. For purposes of this assessment, a premanufactured pre-treatment system was assumed and associated costs are included in the feasibility cost estimate provided in Section 2.4.

2.2.4 Gas Venting

Gas venting is an important consideration in the design and construction of most landfills. Both the North Landfill and Parcel 2 of the Salina Landfill have an existing passive landfill gas venting system in place. For new material placement at Parcel 2, the existing gas vents will need to be extended vertically through the additional fill thickness and new final cover system.

Gas venting at the North Landfill is somewhat more complicated. Currently gas is vented at the perimeter and at three locations on the interior of the landfill. The interior of the landfill includes a system of lateral gas collection trenches that collect and convey the gas to high points on the cover system for venting. The perimeter vents would be maintained, but the interior vents would need to be rerouted to the perimeter to avoid having to penetrate the baseliner of the overlying cell. This modification may require an active gas venting system. Gas venting requirements would need to be evaluated in greater detail in subsequent planning and design phases. For the purposes of this assessment, modification of the existing passive landfill gas venting system into an active system was assumed to be required and associated costs are included in the feasibility cost estimate provided in Section 2.4.

2.2.5 Site Access

It is anticipated that temporary access roads will be constructed along the banks of Ley Creek to facilitate transport of excavated material to the selected local landfill disposal site. However, a large portion of the upland soils and wetland soils is located on the south side of Ley Creek; therefore, construction of a temporary bridge would likely be required to transfer materials to the landfill side of the creek. Access to Ley Creek from the North Landfill is somewhat restricted by the presence of the adjacent wetland; however, an access road could be created that would not impact wetlands.

Convenient access to the landfill from public roadways will be needed for the transport of equipment, materials, and construction personnel working on either landfill. In addition, room for support facilities (e.g., trailers, parking areas, laydown areas) will be required

within the landfill work area (i.e., Parcel 2 or the North Landfill). The Salina Landfill is somewhat less constrained in this respect; however, either location has sufficient room for support facilities. Landfill cells are set back from Route 11 and generally located beyond the landfills' existing support facilities. Only a small buffer exists between the toe of the North Landfill and Seventh North Street and the adjacent wetlands. Furthermore, the North Landfill lacks existing support areas and facilities, which might otherwise be used during the landfill expansion.

In addition, the Salina Landfill is equipped with a series of perimeter access roads around the various parcels, including Parcel 2, for landfill operation and maintenance. The North Landfill lacks this type of infrastructure and is generally far less accessible. There is a vegetated buffer area around the North Landfill, where an access road may be constructed. However, the buffer width and slope are constrained at points by the wetlands on the northeastern and southwestern sides of the landfill and a drainage swale along the northern perimeter.

Temporary access roads will need to be constructed, for each landfill, from the toe of the landfill to new fill areas on top of the existing landfill. This is especially critical where existing geomembrane liner protection is required (i.e., sideslopes of each landfill).

2.2.6 Adjacent Sensitive Receptors

Although both sites are currently zoned industrial and are being used as landfills, this assessment also considered the potential impact to surrounding sensitive receptors (i.e., aquatic resources, residential communities).

As described in Section 1.2.2, the North Landfill abuts two 2.6-acre wetlands, which span nearly half the perimeter of the landfill. These wetlands occupy much of the site outside of the existing capped area. The Salina Landfill also abuts wetlands located west of the site. However, based on the expansiveness of the Salina Landfill (specifically Parcel 2), it is not anticipated that the proximity to these wetlands will constrain landfill disposal and capping activities.

In regard to proximity to residential communities, Parcel 2 of the Salina Landfill is closer than is the more industrially situated North Landfill. The nearest residential community is located approximately 350 feet north of Parcel 2 of the Salina Landfill, and is separated to the north by the New York State Thruway. The second closest residential community is approximately 1,200 feet east of Parcel 2, and is separated to the east by Route 11. The nearest residential community to the North Landfill is approximately 1,300 feet to the southeast, and is separated by a rail corridor, industrial properties, and Route 11.

2.2.7 Stormwater Management

Stormwater management at each disposal site will be very similar. The quantity of stormwater runoff will not change significantly at either site as the land cover (i.e., maintained vegetative cover) would not change significantly following construction. However, the North Landfill currently does not have stormwater conveyance structures. Aside from a drainage swale along the northeastern side, all runoff currently sheet flows from the site due to the relatively flat slopes (i.e., 5 to 9 percent). The conceptual design prepared for this assessment includes 33 percent slopes to achieve the required airspace. Slopes constructed at this grade would require the construction of conveyance swales and energy-dissipating structures (e.g., riprap downchutes) prior to discharge to the existing wetlands to reduce the potential for erosion and sedimentation. The Salina Landfill is already equipped with swales and energy-dissipating riprap downchutes. These existing features would be reutilized and likely replicated in similar fashion as required.

2.3 Assessment Matrix

The assessment considerations presented in Section 2.2 have been organized into the following matrix for ease of comparison. The shaded cells represent those assessment criteria that were more favorable at one site over the alternate location.

Table 1. Assessment Matrix

Assessment Criteria	Town of Salina Landfill – Parcel 2	Cooper Crouse-Hinds North Landfill
Conceptual Airspace and Percent Contingency Achieved	• 200,000 cy (25 percent contingency) • Offers significant flexibility	• 168,000 cy (13 percent contingency) • Offers less flexibility
Conceptual Landfill Grading	• Increases existing height of landfill 15 feet • Allows for 25 percent sideslopes	• Increases existing height of landfill 31 feet • Requires 33 percent sideslopes • Potential to require more robust design and construction techniques
Baseliner and Leachate Management System Requirements	• Not required (leachate management system currently in place)	• Requires baseliner in accordance with Part 360 regulations • Requires leachate management system, possibly including an on-site pre-treatment system
Gas Venting	• Gas vents need to be extended through new waste and final cover system	• Existing gas venting system will require reconfiguration (including potential installation of an active system)
Site Access	• On-site gravel access road network • Available space for support facilities	• Lacks on-site access roads • Limited space for new roads, staging areas, and support facilities
Sensitive Receptors	• Closer proximity to residential neighborhoods	• Abuts two large wetlands/ponds
Stormwater Management	• Existing stormwater conveyances could be utilized and extended as required	• Requires installation of new stormwater conveyances and energy-dissipating devices

* Cell shading indicates favorable characteristic(s)

2.4 Feasibility-Level Cost Estimate

In addition to the assessment considerations presented in Table 1, a feasibility-level cost estimate was developed for each disposal site and is presented in Table 2. The purpose of the cost estimate is to present the relative cost difference between the two local disposal sites and is not intended to be used for budgeting or construction purposes. In addition, costs associated with excavation, dewatering, solidification, and placement within the landfill are not included in this estimate.

Table 2. Feasibility Cost Estimate

Item	Town of Salina Landfill – Parcel 2	Cooper Crouse-Hinds North Landfill
1. Site Preparation	$215,000	$316,000
2. Earthwork	$847,000	$509,000
3. Baseliner System	$0	$3,866,000
4. Final Cover System	$2,461,000	$1,722,000
5. Leachate Treatment System	$0	$150,000
6. Site Restoration	$208,000	$207,000
Subtotal Capital Cost:	$3,731,000	$6,770,000
Engineering, Construction Oversight, and Legal Costs:	$373,000	$677,000
Contingency (25%):	$933,000	$1,693,000
Estimated Potential Cost:	**$5,000,000**	**$9,100,000**

Assumptions:

1. Capital construction costs are based on past project experience and the conceptual design prepared for this Disposal Assessment.
2. North Landfill leachate management system cost assumes the construction of a premanufactured pre-treatment system prior to discharge to the Town of Salina sanitary sewer system.
3. Baseliner and final cover system construction costs are based on the construction of Part 360-compliant liner systems. Baseliner system costs include leachate collection and conveyance costs.
4. Engineering design, construction oversight, and legal costs are assumed to be 10% of the total capital cost.
5. A 25% contingency is added to represent unforeseen costs that may arise due to unforeseen construction challenges or cost changes.
6. Potential costs are expected to be within the typical -30/+50% range associated with feasibility level cost estimates.
7. Costs presented here represent estimated potential design and construction costs. Other potential costs (e.g., permitting, legal agreements, public participation), and any other potential costs associated with the performance of pre-design investigations that may change the scope/scale of the remedy and the resultant disposal volume, have not been considered.

3 CONCLUSIONS

Based on the information presented in this Disposal Assessment, both landfill sites are feasible options for the disposal of non-regulated materials removed from the Ley Creek Subsite. The comparison of the two sites indicates the following key differentiators:

- **Landfill Grading/Available Airspace** – Parcel 2 has a significantly larger footprint (approximately 15 acres) upon which to operate as opposed to an approximately 10-acre footprint at the North Landfill. This additional area allows design flexibility (e.g., significant additional airspace if needed, reduced total height, flatter sideslopes). These characteristics are more constrained at the North Landfill.
- **Gas Venting** – The vertical extension of the existing gas vents at Parcel 2 is relatively easily accomplished, and the system will continue to operate as a passive gas vent system. However, due to the required construction of a baseliner system at the North Landfill (which cannot be penetrated by the existing gas vents), an active system may be required, further complicating design and increasing construction costs.
- **Site Access** – Parcel 2 has more contiguous access to the Subsite and more ancillary space around the disposal site for construction operations as it is not confined on two sides by large wetlands. In addition, the Salina Landfill has a network of existing gravel access roads and existing support facilities that will not have to be constructed to facilitate disposal and cap construction operations.
- **Estimated Cost** – Because the North Landfill requires a Part 360-compliant baseliner system and leachate management, the cost of construction at this disposal site is anticipated to exceed that at the Salina Landfill Parcel 2 site by as much as 40%, as presented in Section 2.4.

Based on a comparison of the two sites, from a technical perspective it appears that the Town of Salina Parcel 2 site offers several advantages over the CCH North Landfill site and would likely be the preferred location. However, there are other non-technical or administrative aspects that may be evaluated as part of the agreement for local disposal, and as a result, the selection of the preferred landfill location will be completed as part of that agreement. As noted above, following the performance of PDI activities at the Subsite, there is some potential for changes in the remediation volumes that would need accommodating at the selected local landfill. As a result, the conclusions of this Disposal Assessment are considered subject to change. The Respondents reserve the right to revisit this Disposal Assessment following the conclusion of further PDI work, and any resulting revisions to the anticipated removal limits.

4 REFERENCES

USEPA. 2014a. Lower Ley Creek Subsite of the Onondaga Lake Superfund Site – Feasibility Study Supplement – Local Disposal Cost Breakdown.

USEPA. 2014b. Record of Decision – Lower Ley Creek Subsite of the Onondaga Lake Superfund Site. September.

USEPA. 2016. Remediation Design Statement of Work – Lower Ley Creek Subsite of the Onondaga Lake Superfund Site. July.

FIGURES

LEGEND:

- ROAD
- HIGHWAY
- RAILROAD
- LANDFILL BOUNDARY
- CREEK SHORELINE (APPROXIMATE)
- 4 TOWN OF SALINA PARCEL ID

0 700 1,400 Feet

GRAPHIC SCALE

NOTES:

1. MAY 2015 IMAGERY OBTAINED FROM GOOGLE EARTH PRO.
2. CREEK SHORELINE OBTAINED FROM A GEODATABASE PROVIDED BY GZA/PALMERTON IN JUNE 2015.
3. PARCEL BOUNDARY DATA OBTAINED FROM ONONDAGA COUNTY IN 2015.

LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
LOCAL DISPOSAL ASSESSMENT REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

City: SYR Div/Group: IM/DV Created By: J.RAPP Last Saved By: Kives
LOWER LEY CREEK (B0035101.0001.00004)
Q:\LowerLeyCreekGroup\SyracuseNY\DisposalAssessmentReport\mxd\SiteLocationMap.mxd 10/31/2016 2:05:40 PM

LEGEND:

- SALINA LANDFILL GROUNDWATER/ LEACHATE COLLECTION TRENCH
- LANDFILL BOUNDARY
- CREEK SHORELINE (APPROXIMATE)
- CONCEPTUAL DESIGN BOUNDARY
- PARCEL BOUNDARY AND ID

0 300 600 Feet

GRAPHIC SCALE

NOTES:

1. MAY 2015 IMAGERY OBTAINED FROM GOOGLE EARTH PRO.
2. CREEK SHORELINE OBTAINED FROM A GEODATABASE PROVIDED BY GZA/PALMERTON IN JUNE 2015.
3. PARCEL BOUNDARY DATA OBTAINED FROM ONONDAGA COUNTY IN 2015.

LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
LOCAL DISPOSAL ASSESSMENT REPORT

LOCAL DISPOSAL OPTIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

City: SYR Div/Group: IM/DV Created By: J.RAPP Last Saved By: jrapp
LOWER LEY CREEK (B0035101.0001.00004)
Q:\Lower\LeyCreek\Groups\Syracuse\NY\Disposal\Assessment\Report\mxd\LocalDisposalOptions.mxd 10/27/2016 3:52:34 PM

ED_013603A_00014492-00031

LEGEND:

- CROSS SECTION (SEE FIGURE 5)
- –315– CONCEPTUAL FINAL GRADE
- CREEK SHORELINE (APPROXIMATE)
- PARCEL BOUNDARY
- CONCEPTUAL DESIGN BOUNDARY
- X 420 CONCEPTUAL HIGH POINT AND ELEVATION

0 150 300 Feet

GRAPHIC SCALE

NOTES:

1. MAY 2015 OBTAINED FROM GOOGLE EARTH PRO.
2. CREEK SHORELINE OBTAINED FROM A GEODATABASE PROVIDED BY GZA/PALMERTON IN JUNE 2015.
3. PARCEL BOUNDARY DATA OBTAINED FROM ONONDAGA COUNTY IN 2015.

LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE

LOCAL DISPOSAL ASSESSMENT REPORT

TOWN OF SALINA LANDFILL PARCEL 2 CONCEPTUAL DESIGN

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

City: SYR Div/Group: IM/DV Created By: J.RAPP Last Saved By: jrapp
LOWER LEY CREEK (B0035101 0001.00001)
Q:\LowerLeyCreekGroup\Syracuse\NY\DisposalAssessment\Report\mxd\TownofSalinaLandfill.mxd 10/27/2016 3:55:58 PM

LEGEND:

- CROSS SECTION (SEE FIGURE 6)
- 315 CONCEPTUAL FINAL GRADE
- CREEK SHORELINE (APPROXIMATE)
- PARCEL BOUNDARY
- CONCEPTUAL DESIGN BOUNDARY
- X 418 CONCEPTUAL HIGH POINT AND ELEVATION

0 150 300 Feet

GRAPHIC SCALE

NOTES:

1. MAY 2015 IMAGERY OBTAINED FROM GOOGLE EARTH PRO.
2. CREEK SHORELINE OBTAINED FROM A GEODATABASE PROVIDED BY GZA/PALMERTON IN JUNE 2015.
3. PARCEL BOUNDARY DATA OBTAINED FROM ONONDAGA COUNTY IN 2015.

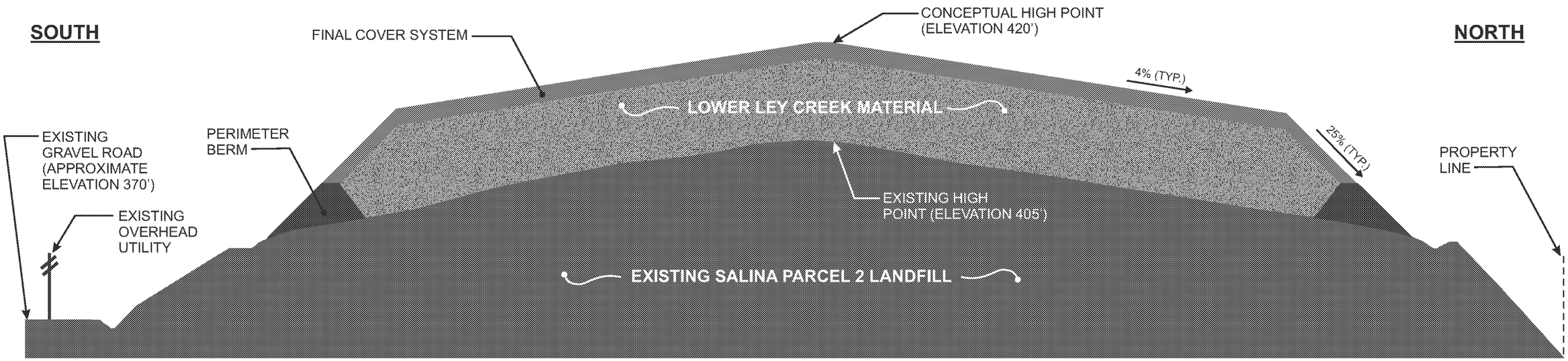
LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
LOCAL DISPOSAL ASSESSMENT REPORT

COOPER CROUSE-HINDS NORTH LANDFILL CONCEPTUAL DESIGN

ARCADIS Design & Consultancy for natural and built assets

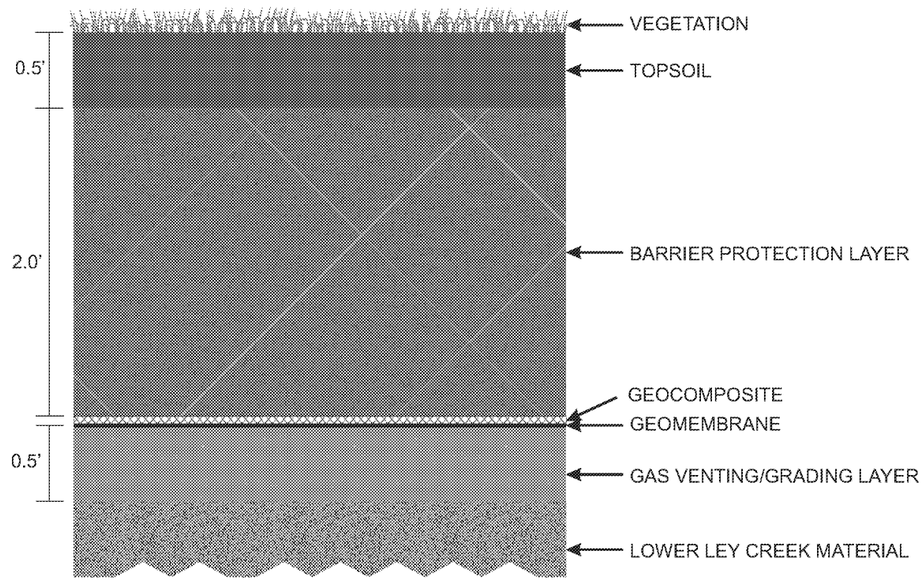
FIGURE 4

City: SYR Div/Group: IM/DV Created By: J.RAPP Last Saved By: jrapp
LOWER LEY CREEK (B0033101.0001.00004)
Q:\Lower Ley Creek Group\Syracuse NY\Disposal\Assessment Report\mxd\Cooper Crouse Hinds North Landfill.mxd (10/27/2016 4:01:49 PM)



CONCEPTUAL SECTION THROUGH LANDFILL

4x VERTICAL EXAGGERATION



FINAL COVER SYSTEM

NOT-TO-SCALE

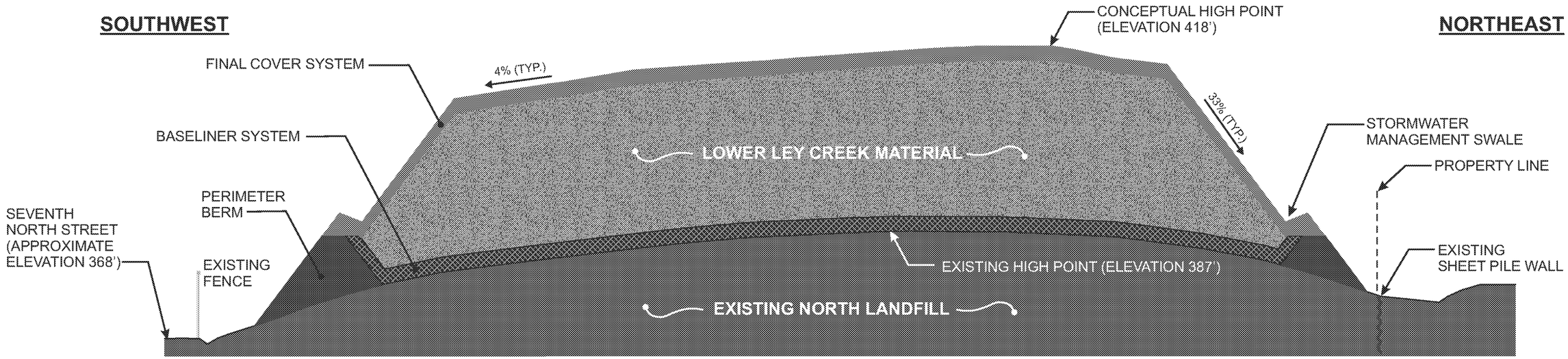
LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
LOCAL DISPOSAL ASSESSMENT REPORT

SALINA LANDFILL PARCEL 2
CONCEPTUAL SECTIONS

ARCADIS Design & Consultancy for natural and built assets

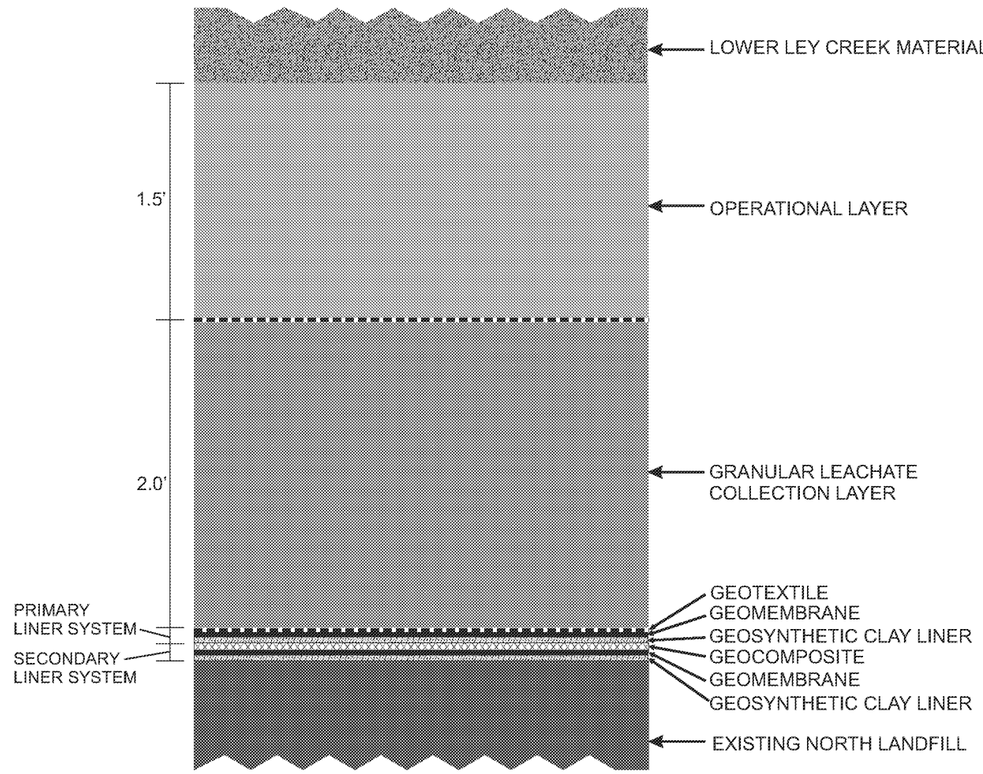
FIGURE
5

10/25/2016 SYRACUSE, DIV/GROUP: ENV/IM-DV DJHOWES
B0033101/0001/00004/CDR/3S1015G01.CDR



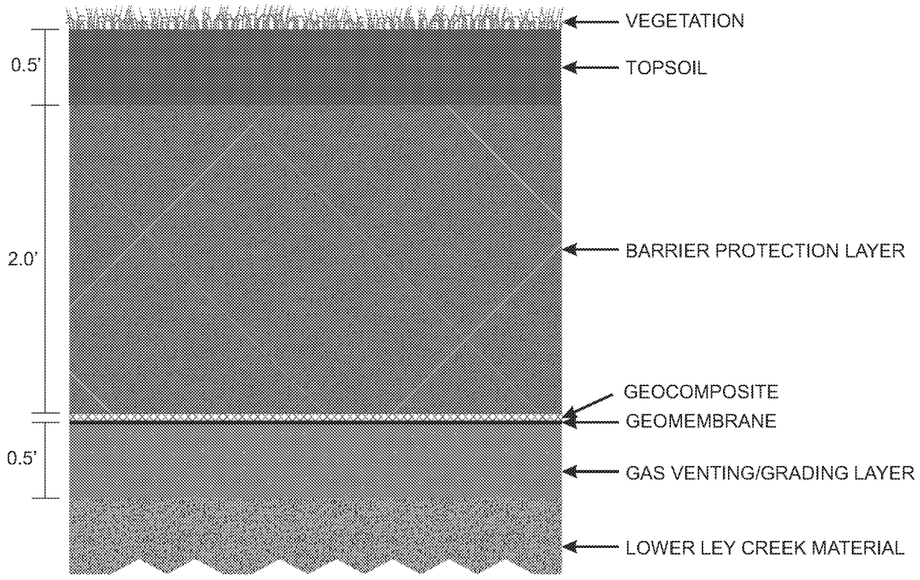
CONCEPTUAL SECTION THROUGH LANDFILL

4x VERTICAL EXAGGERATION



BASELINER SYSTEM

NOT-TO-SCALE



FINAL COVER SYSTEM

NOT-TO-SCALE

LOWER LEY CREEK
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
LOCAL DISPOSAL ASSESSMENT REPORT

COOPER CROUSE-HINDS
NORTH LANDFILL CONCEPTUAL SECTIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6

10/25/2016 SYRACUSE, DIV/GROUP: ENV/IM-DV DJHOWES
B003510T/0001/00004/ODR/3510TG01.CDR

ED_013603A_00014492-00035

Arcadis of New York, Inc.

6723 Towpath Road

P.O. Box 66

Syracuse, New York 13214-0066

Tel 315 446 9120

Fax 315 449 0017

www.arcadis.com